

REMARKS

The Specification has been amended to insert the required reference to the parent application, for which benefit is claimed, of this new Rule 1.53(b) continuing application.

In this Preliminary Amendment, Applicant has amended claim 1 to more appropriately define the present invention. Applicant submits that no new matter has been added. Claims 1-29 are pending.

In the parent application, the Examiner cited Schuster et al. (U.S. Patent No. 6,349,005) and Katigawa (U.S. Patent No. 5,748,372) in rejecting claims 1-2, 7-9, 11-14, and 18-19 of the parent application. Applicant respectfully submits the following remarks by way of demonstrating the allowability of all of the present claims.

Claim 1 of the present continuation application recites a projection optical system comprising, among other things, a first diffractive optical element, a second diffractive optical element, an optical system having a negative power, a negative power, arranged in the optical path between said first diffractive optical element and said second diffractive optical element; a first space formed in an optical path between said first diffractive optical element and said optical system; and a second space formed in an optical path between said optical system and said second diffractive optical element.

In contrast to claim 1, Schuster et al. discloses a projection exposure equipment, which comprises an illumination system B and a projection objective P. Id. at col. 6, lines 33-37 and Fig. 7. The illumination system B comprises a diffractive raster element 9, which forms the object plane of an objective 2; and a second diffractive optical raster element 8, which is provided in the exit pupil of the objective 2; and a glass rod 5, which is used to illuminate the reticle 7. Id. at col. 6, lines 44-61. These two diffractive power

optical raster elements are provided to improve uniformity of illumination of the glass rod at an entrance plane thereof and to provide high illumination efficiency. However, this objective is provided for converting a shape of light beam which enters therein, and is not a projection optical system for forming an image of a first plane on a second plane, as claimed. Further, the functions of the two diffractive optical raster elements in Schuster et al. are different from the claimed first and second diffractive optical elements of the present invention, which are provided for forming an image of the object.

Furthermore, Schuster et al. does not teach or suggest at least a first space formed in an optical path between said first diffractive optical element and said optical system; and a second space formed in an optical path between said optical system and said second diffractive optical element, as recited in claim 1.

Moreover, Schuster et al. discloses a projection objective P, which is arranged between a reticle mask 7 and a wafer 9; however, this projection objective P consists of group of refractive lenses. Id. at col. 7, lines 13-16. The projection system P does not teach or suggest *any* of the elements of claim 1, namely, a first diffractive optical element, a second diffractive optical element, an optical system having a negative power, arranged in the optical path between said first diffractive optical element and said second diffractive optical element, a first space formed in an optical path between said first diffractive optical element and said optical system; or a second space formed in an optical path between said optical system and said second diffractive optical element.

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Therefore, Schuster et al. does not teach or suggest each and every element of claim 1.

Kitagawa discloses an objective system comprising a first diffraction type of element (DOE1), a second diffraction type of element (DOE2), and a cemented lens in between the first and second diffraction type of element. Id. at col. 3, lines 42-49. As shown in Figs. 5-7 of Kitagawa et al., the cemented lens system (front group) in between DOE1 and DOE2 consists of either a triplet, which consists of two positive lenses and a negative, and has a positive refractivity (Figs. 5 and 7) or two doublets (Fig. 6). However, Kitagawa et al. neither teaches nor suggests at least an optical system having a negative power, arranged in the optical path between said first diffractive optical element and said second diffractive optical element, as recited in claim 1.

Furthermore, Kitagawa does not teach or suggest at least a first space formed in an optical path between said first diffractive optical element and said optical system; and a second space formed in an optical path between said optical system and said second diffractive optical element, as recited in claim 1. In other words, Kitagawa merely discloses a cemented triplet provided between two diffractive optical elements, and does not teach or suggest each and every element of claim 1.

Therefore, claim 1 is neither anticipated by nor obvious over Schuster et al. and Kitagawa, either taken alone or in combination. Accordingly, Applicant respectfully submits, claim 1 is allowable. Claims 2, 7-9, 11-14, and 18-19 are also deemed allowable at least in view of their direct or indirect dependencies from allowable claim 1.


Applicant further notes that claims 3, 17, 20, and 21 were allowed in the parent application and, therefore, should continue to be allowable in the present application.

If there is any fee due in connection with the filing of this Preliminary
Amendment, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

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